AMERICAN

CHEMICAL JOURNAL

EDITED BY

IRA REMSEN

PROFESSOR OF CHEMISTRY IN THE JOHNS HOPKINS UNIVERSITY.

VOL. 6. 1884-85.

BALTIMORE: THE EDITOR.

ISAAC FRIEDENWALD, PRINTER.
103 W. Fayette Street.

CONTENTS VOL. VI.

No. 1.

PAGE

ON THE REVERSION OF PHOSPHORIC ACID. By Thomas S. Gladding, 1

THE DETERMINATION OF THE FLASHING POINT OF PETROLEUM. By John T. Stoddard, ... 18

HAYDENITE. By H. N. Morse and W. S. Bayley, ... 24

CONTRIBUTIONS FROM THE SHEFFIELD LABORATORY OF YALE COLLEGE:

XVII. *On the Reduction of Benzoyl-ortho-nitranilide.* By W. G. Mixter, ... 26

HEPTANE FROM PINUS SABINIANA. By C. Schorlemmer and T. E. Thorpe, ... 28

ON SOME NEW FORMS OF ALBUMOSE. By W. Kühne and R. H. Chittenden, ... 31

INVESTIGATIONS ON SINAPINE:

I. *On Sinapic Acid.* By Ira Remsen and R. D. Coale, . . 50

ON THE DETERMINATION OF NITROGEN BY COMBUSTION WITH CALCIUM HYDROXIDE. (From the Annual Report of the Connecticut Agricultural Experiment Station for 1883, communicated by S. W. Johnson, Director), ... 60

REVIEWS AND REPORTS.

The Extraction of Sulphur. By W. S. B., ... 63

Starch and its Transformations under the Influence of Acids. By D. T. D., ... 67

NOTES.

Historical Note concerning the Presence of Carbon in Phosphorus (Ira Remsen), 72. On the alleged Transformation of Brucine into Strychnine (R. D. C.), 73. A Simple Method of extracting Caesium and Rubidium Compounds from Hebron Lepidolite (F. C. Robinson and C. C. Hutchins), 74. The Production of Metallic Titanium by the Action of Sodium at Low Temperatures (F. C. Robinson and C. C. Hutchins), 74. Concerning the Thiophene and Pyrrol Groups, 75. The Liebig Monument, 76.

7192

No. 2.

CONTRIBUTIONS FROM THE CHEMICAL LABORATORY OF HARVARD COLLEGE:

XXXVIII. *On Certain Substances obtained from Turmeric.* By C. Loring Jackson and A. E. Menke, . . 77

XXXIX. *On the Action of Phosphorus Trichloride on Aniline.* By C. Loring Jackson and A. E. Menke, . 89

A NEW HYDROUS MANGANOUS ALUMINIC SULPHATE FROM SEVIER CO., TENN. By W. G. Brown, ... 97

ON SOME NEW FORMS OF ALBUMOSE. By W. Kühne and R. H. Chittenden, ... 101

REVIEWS AND REPORTS.

The Artificial Preparation of Optically Active Substances, . . 120

The Union of Bodies by Pressure, ... 129

Some Recent Text-Books on Chemistry, ... 133

Report on Glucose, prepared by the National Academy of Sciences, in response to a request made by the Commissioner of Internal Revenue, ... 137

On the Discovery of the Periodic Law, and on Relations among the Atomic Weights, ... 142

NOTES.

To remove Noxious Vapors in the Evaporation of Corrosive Liquids (Le R. C. Cooley), ... 144

Recent Publications, ... 146

No. 3.

CONTRIBUTIONS FROM THE SHEFFIELD LABORATORY OF YALE COLLEGE:

XVIII. *The Separation of Zinc and Nickel.* By Thomas B. Osborne, ... 149

XIX. *The Separation of Zinc in Ores, etc.* By Thomas B. Osborne, ... 151

THE QUANTITATIVE ESTIMATION OF CARBON IN ORDINARY PHOSPHORUS. By Ira Remsen and E. H. Keiser, ... 153

CONTRIBUTIONS FROM THE CHEMICAL LABORATORY OF HARVARD COLLEGE:

XL. *On β-Bromtetrachlorpropionic Acid.* By Charles F. Mabery, ... 155

XLI. *On α- and β-Chlordibromacrylic Acids.* By Charles F. Mabery and Rachel Lloyd, ... 157

XLII. *On β-Dibromdichlorpropionic and β-Bromdichloracrylic Acids.* By Charles F. Mabery and H. H. Nicholson, ... 165

XLIII. *On Orthoiodtoluolsulphonic Acid.* By Charles F. Mabery and George H. Palmer, ... 170

XLIV. *On Mucophenoxybromic Acid.* By Henry V. Hill and Edward K. Stevens, ... 187

ON THE ACTION OF BROMINE ON ANHYDROPROPIONYLPHENYLDIAMINE. By Erastus G. Smith, ... 172
NEW FORMS OF LABORATORY APPARATUS. By Edward Hart, . 178
ON A NEW CLASS OF COMPOUNDS ANALOGOUS TO THE PHTHALEINS. By Ira Remsen, ... 180
THE DECOMPOSITION OF SULPHONIC ACIDS BY HEATING WITH HYDRATED SULPHURIC ACID. By C. Friedel and J. M. Crafts, 182
ON CASSITERITE FROM IRISH CREEK, ROCKBRIDGE CO., VA. By W. G. Brown, ... 185

REVIEWS AND REPORTS.

Report on Progress in Physiological Chemistry. By R. H. Chittenden, 195
Thomsen's "Thermochemical Researches." By A. V. E. Young, . 202

NOTES.

On Trymethylene Derivatives (W. C. D.), 207. On Ferrous Chloride (W. C. D.), 210. The Union of Bodies by Pressure (W. S. B.), 212. Gallisin, an Unfermentable Subtance in Starch Sugar, 214. The Atomic Weight of Glucinum, 215. Dumas and Würtz, 215.

No. 4.

CONTRIBUTIONS FROM THE SHEFFIELD LABORATORY OF YALE COLLEGE:
XX. *On Palmitic Acid and the Palmitins.* By R. H. Chittenden and Herbert E. Smith, ... 217
APPARATUS FOR THE DETERMINATION OF NITROGEN BY THE COPPER OXIDE METHOD, AND COMPARISON OF THIS AND THE RUFFLE METHOD. By Charles W. Dabney, Jr., and B. von Herff, . 234
CONTINUOUS ETHERIFICATION. By L. M. Norton and C. O. Prescott, 241
COMMUNICATIONS FROM THE CHEMICAL LABORATORY OF RUTGERS COLLEGE:
XIII. *Note on Ozocerite.* By Franklin S. Smith, . . 247
XIV. *Note on Silicious Earth.* By J. W. McKelvey, . . 247
ANTHRACENE FROM WATER-GAS TAR. By Arthur H. Elliott, . . 248
ON THE ACTION OF SODIUM PHENYSULPHINATE ON METHYLENE IODIDE. By Arthur Michael and George M. Palmer, . 253
ON THE CONVERSION OF ORGANIC ISOCYANATES INTO MUSTARD OILS. By Arthur Michael and George M. Palmer, ... 257
INVESTIGATIONS ON THE SULPHINIDES. By Ira Remsen, . . . 260
I. *On Phthalic Sulphinide.* By H. N. Stokes, . . . 262

NOTES.

On the Permeability of Silver for Oxygen Gas (J. R. D.), 283. Recent Methods for the Preparation of Aluminium (E. H. K.), 284. Examinations of Fats and Oils (E. H. K.), 285. Combined Carbon in Iron and Steel (W. S. B.), 286.

No. 5.

DETERMINATIONS OF LACTOSE IN MILKS BY OPTICAL METHODS. By Harvey W. Wiley, ... 289

THE CHEMICAL COMPOSITION OF WHEAT AND CORN AS INFLUENCED BY ENVIRONMENT. By Clifford Richardson, ... 302

CONTRIBUTIONS FROM THE SHEFFIELD LABORATORY OF YALE COLLEGE:

XXI. *On the Relative Digestibility of Fish Flesh in Gastric Juice.* By R. H. Chittenden and Geo. W. Cummins, 318

AN IMPROVEMENT IN THE APPARATUS FOR PRECIPITATING COPPER BY ELECTROLYSIS. By Herbert C. Foote, ... 333

SYNTHETICAL RESEARCHES IN THE GLUCOSIDE GROUP. III. By Arthur Michael, ... 336

CONTRIBUTIONS FROM THE CHEMICAL LABORATORY OF CORNELL UNIVERSITY:

I. *The Behavior of Iodic Acid as an Indicator.* By F. E. Furry, 341

A NEW METHOD FOR THE DETECTION OF IODINE, BROMINE AND CHLORINE. By Edward Hart, ... 346

A SIMPLE APPARATUS WHICH ENABLES STUDENTS TO DETERMINE THE EQUIVALENTS OF CERTAIN ELEMENTS. By H. N. Morse and E. H. Keiser, ... 347

REVIEWS AND REPORTS.

Report on Progress in Analytical Chemistry, ... 351

On the Magnetic Rotary Polarisation of Compounds in Relation to their Chemical Constitution, ... 356

Recent Researches on Uric Acid, ... 360

Books Recently Received, ... 364

No. 6.

ON THE ACQUISITION OF ATMOSPHERIC NITROGEN BY PLANTS. By W. O. Atwater, ... 365

CONTRIBUTIONS FROM THE CHEMICAL BUREAU, U. S. DEPARTMENT OF AGRICULTURE:

III. *The Chemical Composition of the Products of Roller Milling of Wheat.* By Clifford Richardson, . . 388

IV. *The Time Element in Gluten Determinations.* By Wm. Frear, ... 402

CONTRIBUTIONS FROM THE CHEMICAL LABORATORY OF HARVARD COLLEGE:

XLV. *On the Reduction of Camphor to Borneol.* By C. Loring Jackson, ... 404

THE ACTION OF LIGHT ON SILVER CHLORIDE. By Spencer B. Newbury, ... 407

MINERALOGICAL NOTES. By Edgar F. Smith, ... 411

REMARKS ON SCHULZE'S PROCESS FOR THE QUANTITATIVE DETERMINATION OF THE HALOGENS IN AROMATIC COMPOUNDS. By L. P. Kinnicutt and R. C. Sweetser, ... 415

NOTES ON THE HÜBL METHOD FOR THE EXAMINATION OF OILS AND FATS. By Russell W. Moore, ... 416

ON THE ACTION OF METHYL IODIDE ON ASPARAGINE. By Arthur Michael and John F. Wing, ... 419

REVIEWS AND REPORTS.

A Treatise on the Principles of Chemistry. By M. M. Pattison Muir, 423

Note in regard to the Influence of Magnetism on Chemical Action, . 430

Obituary Notes, ... 431

Recent Publications, ... 433

Index, ... 435

INDEX VOL. VI.

PAGE

ALBUMOSE, some new forms of 31, 110
Alcohol 241
Aluminium, recent methods for the preparation of 284
Anhydropropionylphenylendiamine, action of bromine on 172
Aniline, action of phosphorus trichloride on 89
Anthracene from water-gas tar 248
Apophyllite 412
Apparatus for absorption in elementary analysis 353
" " determination of nitrogen by the copper oxide method 234
" new forms of laboratory 178
" used for precipitating copper by electrolysis, improvement in . . . 333
Aspargine, on the action of methyl iodide on 419
Atwater, W. O. On the acquisition of atmospheric nitrogen by plants 365

BAYLEY, W. S. See *Morse, H. N.*
Benzoyl-ortho-nitranilide, reduction of 26
Benzoyl-ortho-phenylenediamine 27
Bile 195
Borneol, on reduction of camphor to 404
β-bromdichloracrylic acid 165
Bromine, action of, on anhydropropionylphenylendiamine 172
" " " silver bromide, chloride and iodide 352
" new method for the detection of 346
β-bromtetrachlorpropionic acid 155
Brown, W. G. A new hydrous manganous aluminic sulphate from Sevier Co., Tenn. 97
Brucine, alleged transformation of, into strychnine 73
Brunner, D. B. See *Knerr, E. B.*
" See also *Hoskinson, W. S.*

CAESIUM compounds, simple method of extracting from Hebron lepidolite . . 74
Calcaroni method of extracting sulphur 63
Calcium chloride, use of, in extracting sulphur from its ores 65
" hydroxide, determination of nitrogen by combustion with 60
Camphor, reduction of, to borneol 404
Carbon, combined, in iron and steel 286
" in phosphorus, historical note on 72
" quantitative estimation of, in phosphorus 153
Cassiterite from Irish Creek, Rockbridge Co., Virginia 185
Chemical action, note in regard to the influence of magnetism on 430
" constitution, on the rotary polarisation of compounds in reference to . . 356

Chittenden, R. H. Report on physiological chemistry 195
" and *Cummins, G. W.* On the relative digestibility of fish flesh in gastric juice 318
" and *Smith, H. E.* On palmitic acid and the palmitins . . 217
" See also *Kühne, W.*
Chlordibromacrylic acids 157
Chlorine, bromine and iodine in the presence of one another, estimation of . . 352
Chlorine in urine, determination of 351
" new method for the detection of 346
Coale, R. D. See *Remsen, Ira.*
Cochineal, use of as an indicator in the determination of ammonia 61
Cooley, Le R. C. To remove noxious vapors in the evaporation of corrosive liquids . 144
Copper, improvement in apparatus for precipitating, by electrolysis 333
Corn, chemical composition of, as influenced by environment 302
Crafts, J. M. See *Friedel, C.*
Cummins, G. W. See *Chittenden, R. H.*
Curcumin 77

DABNEY, C. W., and *von Herff, B.* Apparatus for the determination of nitrogen by the copper oxide method and comparison of this and the Ruffle method . . 234
Davidson, F. P. Stilbite 414
Dextrine 70
Dextrose 69
β-dibromdichlorpropionic acid 165
Dumas and Würtz 215

ELEMENTARY analysis, absorption apparatus for 353
Elliott, A. H. Anthracene from water-gas tar 248
Equivalents of certain elements, simple apparatus for determining 347
Etherification, continuous 241
Evaporation of corrosive liquids, to remove noxious vapors in the 144

FATS and oils, examination of 285, 416
Ferrous chloride 210
Fish flesh, relative digestibility in gastric juice 318
Flour 393
Foote, H. C. An improvement in the apparatus for precipitating copper by electrolysis 333
Fractional distillation, apparatus for 178
Frear, W. The time element in gluten determinations 402
Friedel, C., and *Crafts, J. M.* The decomposition of sulphonic acids by heating with hydrated sulphuric acid 182
Furry, F. E. The behavior of iodic acid as an indicator 341

GALLISIN, an unfermentable substance in starch-sugar 214
Gastric juice, relative digestibility of fish flesh in 318
Gladding, T. S. On the reversion of phosphoric acid 1
Glauconite 412
Glucinum, atomic weight of 215
Glucose, report on 137
Glucoside group, synthetical researches in 336
Gluten, the time element in determinations of 402
Glycogen 195
Guiacol 339

HALOGENS in the side chains of aromatic compounds, determination of . . . 351, 415
Hart, Edward. New forms of laboratory apparatus 178
" " A new method for the detection of iodine, bromine and chlorine . 346
" " Water-gas tar 431
Haydenite 24
Heptane from Pinus Sabiniana 28
Von Herff, B. See *Dabney, C. W.*
Heulandite 412
Hill, H. B., and *Stevens, E. K.* On mucophenoxybromic acid 187
Hoskinson, W. S., and *Brunner, D. B.* Stilbite 414
Hübner, Hans 431
Hutchins, C. C. See *Robinson, F. C.*
Hydrogen dioxide, new reaction for the detection of 355

IODIC acid as an indicator, behavior of 341
Iodine, action of, on silver bromide, chloride and iodide 352
" and chlorine, separation of by a dry method 352
" bromine and chlorine, new method for the detection of 346
" determination of in a mixture of iodides, bromides and chlorides . . . 353
Iron, combined carbon in 286
Isoamyl alcohol 244
Isobutyl " 244
Isocyanates, conversion into mustard oils 257

JACKSON, C. L. On the reduction of camphor to borneol 404
" On the action of phosphorus trichloride on aniline 89
" and *Menke, A. E.* On certain substances obtained from turmeric, 77
Johnson, S. W. On the determination of nitrogen by combustion with calcium hydroxide 60

KALINITE 97
Keiser, E. H. See *Morse, H. N.*
" See also *Remsen, Ira.*
Kinnicutt, L. P., and *Sweetser, R. C.* Remarks on Schulze's process for the quantitative determination of the halogens in aromatic compounds 415
Knerr, E. B., and *Brunner, D. B.* Menaccanite 413
" " and *Schoenfeld, J.* Glauconite, apophyllite and heulandite . . . 412
Kolbe, Hermann 431
Kuhne, W., and *Chittenden, R. H.* On some new forms of albumose . . . 31, 101

LACTOSE in milks, determinations of, by optical methods 289
Lepidolite from Hebron, extraction of caesium and rubidium from 74
Liebig monument, the 76
Liquid paraffin as a reagent for the detection of water in alcohol, chloroform and ether 355
Liver, bile and glycogen 195
Lloyd, Rachel. See *Mabery, C. F.*

MABERY, C. F. On β-bromtetrachlorpropionic acid 155
" and *Lloyd, Rachel.* On α- and β-chlordibromacrylic acids . . 157
" and *Nicholson, H. H.* On β-dibromdichlorpropionic acid and β-bromdichloracrylic acid 165
" and *Palmer, G. H.* On orthoiodotoluolsulphonic acid 170
Magnetic rotary polarisation of compounds in relation to their chemical constitution, 356
Magnetism, influence on chemical action 430
Manganous aluminic sulphate from Sevier Co., Tennessee, a new hydrous . . . 97
McKelvey, J. W. Note on silicious earth 247

Menaccanite 413
Menke, A. E. See *Jackson, C. L.*
Methyl alcohol 244
" arbutin, identity of natural and synthetical 336
" iodide, action on asparagine 419
Methylene iodide, action on, of sodium phenylsulphinate 253
Michael, Arthur. Synthetical researches in the glucoside group 336
" and *Palmer, G. M.* On the action of sodium phenylsulphinate on methylene iodide 253
" and *Palmer, G. M.* On the conversion of organic isocyanates into mustard oils 257
" and *Wing, J. F.* On the action of methyl iodide on asparagine . 419
Milk sugar, specific rotatory power of 289
Mixter, W. G. On the reduction of benzoyl-ortho-nitranilide 26
Moore, R. W. Notes on the Hübl method for the examination of fats and oils . 416
Morse, H. N., and *Bayley, W. S.* Haydenite 24
" and *Keiser, E. H.* A simple apparatus which enables students to determine the equivalents of certain substances 347
Mucophenoxybromic acid 187
Mustard oils, conversion of organic isocyanates into 257

NEWBURY, S. B. Action of light on silver chloride 407
Nicholson, H. H. See *Mabery, C. F.*
Nickel and zinc, separation of 149
Nitrogen, by the copper oxide method, apparatus for determination of . . . 234
" determination of, by combustion with calcium hydroxide 60
" on the acquisition of atmospheric, by plants 365
Norton, L. M., and *Prescott, C. O.* Continuous etherification 241

OBITUARY notes 431
Oils, examination of 285
" and fats, notes on the Hübl method for the examination of 416
Optically active substances, artificial preparation of 120
Orthoiodotoluolsulphonic acid 170
Osborne, T. B. The separation of zinc and nickel 149
" " " in ores, etc. 151
Oxygen, permeability of silver for 283
Ozocerite, note on 247

PALMER, G. W. See *Mabery, C. F.*
" See also *Michael, A.*
Palmitic acid and the palmitins 217
Pectolite 411
Periodic law, on the discovery of the 142
Petroleum, flashing point of 18
Phenoxybromacrylic acid 190
Phenoxybrommaleic acid 193
Phenylsulphinate of sodium, action of, on methylene iodide 253
Phosphoric acid, on the reversion of 1
Phosphorus, historical note on the presence of carbon in 72
" quantitative estimation of carbon in 153
" trichloride, action on aniline 89
Phthaleins, new class of compounds analogous to 180
Phthalic sulphinide 262
Pinus Sabiniana, heptane from 30
Plants, on the acquisition of atmospheric nitrogen by 365

Potassium chromate, neutral, use of in preparing standard iodine solutions . . . 353
Prescott, C. O. See *Norton, L. M.*
Pressure, union of bodies by 129, 212
Propyl alcohol 243
Publications, recent 133, 146, 364, 433
" " See also Reviews.
Pyrrol group 75

REMSEN, IRA. Investigations on the sulphinides 260
" Note in regard to the influence of magnetism on chemical action . 430
" On a new class of compounds analogous to the phthaleins . . 180
" Historical note on the presence of carbon in phosphorus . . . 72
" and *Coale, R. D.* Investigations on sinapine 50
" and *Keiser, E. H.* The quantitative estimation of carbon in ordinary phosphorus 153
Report on analytical chemistry 351
" " physiological chemistry 195
Review of "A Treatise on the Principles of Chemistry" 423
Richardson, Clifford. The chemical composition of the products of roller milling of wheat 388
" The chemical composition of corn and wheat as influenced by environment 302
Robinson, F. C., and *Hutchins, C. C.* A simple method of extracting caesium and rubidium compounds from Hebron lepidolite 74
Robinson, F. C., and *Hutchins, C. C.* The production of metallic titanium by the action of sodium at low temperatures 74
Rubidium compounds, simple method of extracting from lepidolite 74

SCHOENFELD, J. See *Knerr, E. B.*
Schorlemmer, C., and *Thorpe, T. E.* Heptane from Pinus Sabiniana . . . 28
Silicious earth, note on 247
Silver chloride, action of light on 407
" permeability of, for oxygen gas 283
Sinapic acid 50
Sinapine, investigations on 50
Smith, E. F. Mineralogical notes 411
" *E. G.* On the action of bromine on anhydropropionylphenylendiamine . 172
" *F. S.* Note on ozocerite 247
" *H. E.* See *Chittenden, R. H.*
Soils, artificial, experiments on 4
Starch and its transformations under the influence of acids 67
Steel, combined carbon in 286
Sterri, sulphur in 66
Stevens, E. K. See *Hill, H. B.*
Stilbite 414
Stoddard, J. T. The determination of the flashing point of petroleum . . . 18
Stokes, H. N. On phthalic sulphinide 262
Strychnine, on the alleged transformation of brucine into 73
Sulphinides, investigations on 260
Sulphonic acids, decomposition of, by heating with hydrated sulphuric acid . . 182
Sulphur, extraction of 63
Superphosphates, method of analysis of 16
Sweetser, R. C. See *Kinnicutt, L. P.*

THERMOCHEMICAL Researches, Thomsen's 202
Thiophene group 75
Thorpe, T. E. See *Schorlemmer, C.*

Titanite 412
Titanium, production of, by the action of sodium at low temperatures . . . 74
Trimethylene derivatives 207
Turmeric, certain substances obtained from 77
Turmerol 81

UNION of bodies by pressure 129, 212
Uric acid, recent researches on 360

WATER-GAS TAR, anthracene from 248, 431
Watts, Henry 432
Wheat and corn, chemical composition of, as influenced by environment . . . 302
" the chemical composition of the products of roller milling of 388
Wiley, H. W. Determinations of lactose in milks by optical methods . . . 289
Wing, J. F. See *Michael, A.* 419
Würtz, Adolph 215

YOUNG, A. V. E. Thomsen's "Thermochemical Researches" 202

ZINC and nickel, separation of 149
" in ores, &c., separation of 151